

APPLICATION NO. 10/035346

August 3, 2004

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CLMPTO

1. (Currently Amended) A varactor comprising:
 - a diode junction;
 - a depletion region adjacent to the diode junction; and
 - a doped region beginning at the diode junction, including the depletion region and having a nonuniform dopant concentration profile that continuously increases with increasing depth of the doped region starting from the diode junction and continuing to a peak concentration region at the deepest portion of the doped region;and wherein the continuously increasing nonuniform dopant concentration profile causes the varactor to have an approximately linear capacitance/voltage response characteristic.
2. Canceled
3. (Previously Amended) A varactor as defined in claim 1 wherein:
 - the nonuniform dopant concentration profile is defined by an equation $N=Bx\exp(m)$, where N is the dopant concentration, x is the depth of the doped region, B is a concentration constant and m is an exponent that determines the degree of curvature of the dopant profile, and m is greater than 1.
4. Canceled
5. (Original) A varactor as defined in claim 3 wherein m is about 3.
6. (Previously Amended) A varactor as defined in claim 3 wherein:
 - B is in a range from about $1.0E13/cm^3$ to about $1.0E19/cm^3$; and
 - m is greater than one.
7. (Original) A varactor as defined in claim 6 wherein B is about $1.0E16/cm^3$.
- 8.-10. Canceled

CLAIMS 11-17 (CANCELLED)